

## Title (en)

STEEL FOR PRESS HARDENING AND PRESS HARDENED PART MANUFACTURED FROM SUCH STEEL

## Title (de)

STAHL ZUM PRESSHÄRTEN UND AUS SOLCH EINEM STAHL HERGESTELLTES PRESSGEHÄRTETES TEIL

## Title (fr)

ACIER POUR LE DURCISSEMENT À LA PRESSE ET PIÈCE DURCIE À LA PRESSE FABRIQUÉE À PARTIR D'UN TEL EN ACIER

## Publication

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## Application

**EP 19194164 A 20160610**

## Priority

- IB 2015001156 W 20150709
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## Abstract (en)

A press hardened steel part wherein the chemical composition of the steel comprises, in weight:  $0.062\% \leq C \leq 0.095\%$ ,  $1.4\% \leq Mn \leq 1.9\%$ ,  $0.2\% \leq Si \leq 0.5\%$ ,  $0.020\% \leq Al \leq 0.070\%$ ,  $0.02\% \leq Cr \leq 0.1\%$ , wherein :  $1.5\% \leq (C+Mn+Si+Cr) \leq 2.7\%$ ,  $0.040\% \leq Nb \leq 0.060\%$ ,  $3.4 \times N \leq Ti \leq 8 \times N$  wherein:  $0.044\% \leq (Nb + Ti) \leq 0.090\%$ ,  $0.0005 \leq B \leq 0.004\%$ ,  $0.001\% \leq N \leq 0.009\%$ ,  $0.0005\% \leq S \leq 0.003\%$ ,  $0.001\% \leq P \leq 0.020\%$ , optionally:  $0.0001\% \leq Ca \leq 0.003\%$ , the remainder being Fe and unavoidable impurities, and wherein the microstructure comprises, in the majority of the part, in surface fractions: less than 40% of bainite, less than 5% of austenite, less than 5% of ferrite, the remainder being martensite, said martensite consisting of fresh martensite and of self-tempered martensite..

## IPC 8 full level

**C21D 8/02** (2006.01); **B32B 15/01** (2006.01); **C21D 1/673** (2006.01); **C22C 21/02** (2006.01); **C22C 38/00** (2006.01); **C22C 38/06** (2006.01); **C22C 38/26** (2006.01); **C22C 38/28** (2006.01); **C22C 38/32** (2006.01); **C22C 38/38** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01); **C22C 38/48** (2006.01); **C22C 38/50** (2006.01); **C22C 38/54** (2006.01)

## CPC (source: CN EP KR RU US)

**B21B 1/22** (2013.01 - US); **B21D 22/022** (2013.01 - CN EP US); **B23K 26/02** (2013.01 - US); **B23K 26/21** (2015.10 - US); **B32B 15/012** (2013.01 - CN EP KR US); **C21D 1/673** (2013.01 - CN EP KR US); **C21D 6/002** (2013.01 - EP US); **C21D 6/005** (2013.01 - EP US); **C21D 6/008** (2013.01 - EP US); **C21D 8/02** (2013.01 - RU); **C21D 8/0205** (2013.01 - EP US); **C21D 8/0226** (2013.01 - EP US); **C21D 8/0236** (2013.01 - EP US); **C21D 8/0263** (2013.01 - EP US); **C21D 8/0278** (2013.01 - CN EP KR US); **C21D 9/46** (2013.01 - EP KR US); **C22C 21/02** (2013.01 - CN EP US); **C22C 38/001** (2013.01 - CN EP US); **C22C 38/002** (2013.01 - EP US); **C22C 38/02** (2013.01 - CN EP US); **C22C 38/04** (2013.01 - KR); **C22C 38/06** (2013.01 - CN EP US); **C22C 38/22** (2013.01 - EP US); **C22C 38/26** (2013.01 - CN EP KR US); **C22C 38/28** (2013.01 - CN EP KR US); **C22C 38/32** (2013.01 - CN EP KR US); **C22C 38/38** (2013.01 - CN EP KR RU US); **C22C 38/44** (2013.01 - CN EP US); **C22C 38/46** (2013.01 - CN EP US); **C22C 38/48** (2013.01 - CN EP US); **C22C 38/50** (2013.01 - CN EP US); **C22C 38/54** (2013.01 - CN EP US); **C23C 2/12** (2013.01 - US); **B21B 2001/225** (2013.01 - US); **B32B 2605/00** (2013.01 - US); **C21D 2211/001** (2013.01 - EP US); **C21D 2211/002** (2013.01 - EP KR US); **C21D 2211/005** (2013.01 - EP US); **C21D 2211/008** (2013.01 - EP KR US)

## Citation (applicant)

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**WO 2017006144 A1 20170112**; BR 112017023444 A2 20180731; BR 112017023444 B1 20211130; CA 2990356 A1 20170112; CA 2990356 C 20191126; CA 3058829 A1 20170112; CA 3058829 C 20230418; CA 3191853 A1 20170112; CN 107810281 A 20180316; CN 107810281 B 20190611; CN 110117753 A 20190813; CN 110117753 B 20210928; CN 110144443 A 20190820; CN 110144443 B 20210525; CN 110144444 A 20190820; CN 110144444 B 20210525; CN 110195150 A 20190903; CN 110195150 B 20220301; CN 110195151 A 20190903; CN 110195151 B 20220215; CN 110205449 A 20190906; CN 110205449 B 20210921; EP 3320119 A1 20180516; EP 3320119 B1 20191023; EP 3591079 A1 20200108; EP 3591079 B1 20210602; EP 3604564 A1 20200205; EP 3604564 B1 20231004; EP 4234746 A2 20230830; EP 4234746 A3 20231115; ES 2763454 T3 20200528; ES 2878899 T3 20211119; ES 2967397 T3 20240430; FI 3604564 T3 20231108; HU E048028 T2 20200528; HU E055394 T2 20211129; HU E064099 T2 20240228; JP 2018527457 A 20180920; JP 2020073723 A 20200514; JP 2020073724 A 20200514; JP 2022017398 A 20220125; JP 2022023173 A 20220207; JP 6640885 B2 20200205; JP 6970172 B2 20211124;

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